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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/061,008	01/30/2002	James W. Burruss	100200933-1	7911

7590 10/18/2006

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EXAMINER	
STERRETT, JONATHAN G	

ART UNIT	PAPER NUMBER
3623	

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/061,008	BURRUSS ET AL.	
	Examiner	Art Unit	
	Jonathan G. Sterrett	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 July 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is Final. Currently **Claims 1-20** are pending. This action is in response to the amendment filed July 25, 2006.

Response to Arguments

2. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 1-20** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding **Claim 1**, the limitations describe parameter values "each individually controlling a respective aspect of a respective one of a growth phase, a maturity phase, and a decline phase". Since these phases are part of a product life cycle curve, they must be contiguous with each other, that is, there exists no discontinuities from one phase to another. However, if the phases are individually (i.e. separately) controlled, then the phases must be discontinuous with each other and cannot represent a life cycle curve. Thus, it is not clear how the phases of the product lifecycle can be individually controlled and also contiguous. Therefore, the claim is indefinite.

Claims 2-10 depend on **claim 1** and are therefore indefinite at least for the reason given above for **claim 1**.

Regarding **Claim 11**, the limitations describe "imposing" on a set of demand parameters a demand profile to generate a demand forecast. Since a demand forecast is a numerical result, the use of the word "imposing", i.e. impose, is unclear because it does not definitively specify what kind of numerical (e.g. multiplication, addition?) operation is being performed. For the purposes of examination, the examiner assumes the definition is that of "convolving" used in claim 1.

Claims 12-20 depend on **claim 11** and are indefinite at least for the reasons specified for **claim 11** above.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 USC. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. **Claims 1-12 and 15-20** are rejected under 35 USC. 103(a) as being unpatentable over **Cox**, William E., Jr; "Product Life Cycles as Marketing Models", (Oct., 1967), The Journal of Business, Vol. 40, No. 4. pp. 375-384.

Regarding **Claim 1**, Cox teaches the need to develop a quantitative model of the product life cycle model (page 376 column 1 para 2), where the product life cycle model

is comprised of four stages: introduction, growth, maturity and decline (page 375 column 1 para 2). Cox further teaches that there are different approaches to modeling and forecasting product demand as per:

obtaining a product life cycle template comprising template parameter values each individually controlling a respective aspect of a respective one of a growth phase, a maturity phase, and a decline phase of a template demand profile;

Page 382 Figure 2, the different types of product life cycle templates are comprised of parameter values; these parameter values control a respective aspect of a growth phase of a product life cycle quantitative model (i.e. a demand profile).

producing an initial demand forecast comprising demand values for the product over a product life cycle, wherein the producing comprises modifying one or more of the template parameter values of the product life cycle template

Page 384 column 1 para 3, total sales may be forecast over a total product life cycle based on a point estimate. Using the appropriate model for the life cycle curve would involve inputting a parameter (i.e. the maximum sales point) into the appropriate mathematical model to

determining one or more impact profiles each of which comprises one or more impact values, wherein each of the impact values specifies a respective impact of a respective set of one or more events on the initial demand forecast during a respective period of the product life cycle; and

page 383 column 2 para 2, the promotional efforts (i.e. impact profiles) result in increased sales in the product where the values (i.e. increase in promotional expenditures) occur at the end of the Maturity phase.

generating an event-adjusted demand forecast for the product, wherein the generating comprises convolving the impact values of the respective periods of the one or more impact profiles with the demand values of corresponding periods of the initial demand forecast.

Page 383 column 2 para 3, the transformation of a second degree polynomial into a third degree polynomial is a convolution of the impact of the promotional efforts into the baseline demand based on the product life cycle. Note that the promotional efforts are time phased and occur "when a product reaches the end of the third, or Maturity, stage of the product".

Cox does not teach:

Regarding **Claim 2**, Cox teaches:

wherein the producing comprises deriving the demand values of the initial demand forecast based on a scaling of the template parameter values of the product life cycle template based on an estimate of the mature demand for the product.

Page 384 column 1 para 3, sales can be projected (i.e. deriving demand values) based on scaling of the equation's values (i.e. template parameter values) based on an estimate of the maximum sales level of the product estimated sales level.

Regarding **Claim 3**, Cox teaches:

wherein the producing comprises deriving ones of the demand values of the initial demand forecast based on estimates of one or more template parameters representing a length of one or more of the phases of the template demand profile.

Page 384 column 1 para 2, Cox teaches the use of deriving a demand curve based on applying a sinusoidal function to approximate the product life cycle curve, i.e. the parameter period represents the length of the phases of the profile.

Regarding **Claim 4**, Cox teaches:

wherein the producing comprises deriving ones of the demand values of the initial demand forecast based on length estimates for the maturity and decline phases of the template demand profile.

Page 384 column 1 para 2, Cox teaches the use of deriving a demand curve based on applying a sinusoidal function to approximate the product life cycle curve. Since the sinusoidal curve provides for deriving the demand values for the maturity and decline values (i.e. back side of sine curve)

Regarding **Claim 5**, Cox teaches:

wherein the producing comprises deriving ones of the demand values of the initial demand forecast based on an estimate of stock-in demand relative to an estimate of mature demand.

Figure 1 (4) commercial death (i.e) the end of the maturity phase is based on an estimate of 10 or 20 % of catalog sales (i.e. stock-in demand) relative to (3), the beginning of the mature demand.

Regarding **Claim 6**, Cox teaches:

wherein the generating comprises multiplying the impact values of the respective periods of one or more of the impact profiles with the demand values of corresponding periods of the initial demand forecast.

As discussed above in generating the forecast, Page 383 column 2 para 3, Cox teaches the impact that promotions have on sales.

Page 384 column 1 para 2, Cox teaches the applicability of fourier transforms into decomposing a demand function into its elements. Since the fourier transforms translate between the convolution and multiplication of functions, this would include determining the product of a function with its fourier transform to determine a sales forecast.

Regarding **Claim 7**, Cox teaches:

wherein the determining comprises determining at least one of a

seasonality impact profile, a price drop impact profile, a promotions impact profile, a competitive product introduction impact profile, and an economic conditions impact profile, and the generating comprises multiplying the impact values of the respective periods of the at least one determined impact profile with the demand values of corresponding periods of the initial demand forecast.

Page 383 column 2 para 3, Price teaches the impact of a promotional curve on extending the maturity and decline phases of a product and (page 384 column 1 para 2) Price teaches fourier transforms being used to understand how different curves (i.e. various impact profiles) impact the underlying product life cycle curve (i.e. Cox teaches using fourier analysis). Multiplying fourier transforms together result in the function curve that is decomposed and expressed in terms of fourier transforms.

Regarding **Claim 8**, (Page 383 column 2 para 3), Cox teaches the combination of natural (i.e. life cycle curve) effects and promotional effects to understand the total sales profile. Cox further teaches the application of fourier transforms to understand how different curves can be added to determine what the combined product life cycle (composed of all functions) would look like.

While Cox does not teach adding impact values with the demand values to determine the total demand per se, it is old and well known in the art to do so. The adding of the two values provides for a total determination of demand based on the natural demand (i.e or base level demand taught by Cox) and using an incremental demand (i.e. or the additional 'promotional' demand as taught by Cox).

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the teachings of Cox, regarding different aspects of demand, including natural and promotional and the additional teaching of Cox regarding the use of Fourier transforms, to determine total demand by adding the impact values to the demand values, because it would provide a way to understand total demand.

Regarding **Claim 9**, Cox teaches:

wherein the determining comprises determining at least one of a deals impact profile, a constrained product introduction impact profile, a left-to-sell impact profile and an impact profile corresponding to a bundling event, and the generating comprises adding the impact values of the respective periods of the at least one determined impact profile with the demand values of corresponding periods of the initial demand forecast.

Page 383 column 2 para 3, Cox teaches the combination of a natural response (i.e. a baseline demand forecast) with a promotional period. Cox further teaches the separation of different effects upon sales (using fourier transforms as discussed above).

While Cox does not teach adding an impact profile to an initial demand forecast, it is known in the art that various promotional elements have an impact on a baseline forecast.

It would have been therefore obvious to one of ordinary skill in the art at the time of the invention to add a profile to an initial demand forecast because it would determine what the total forecast would be based on the impact of that particular item.

Regarding **Claim 10**, Cox teaches using a normalization scheme in concert with past (i.e. historical data) to determine the boundaries of the product life cycle (i.e. for maturity and decline, Cox teaches using the 10 percent and 20 percent rule). While Cox does not teach using normalization rule for the introduction and growth boundaries (i.e. template parameter values), it is old and well known in the art to normalize data to obtain useful relationships using the data set as a whole.

Cox teaches that the life cycle model provides for quantitatively understanding the product life cycle curve and that using the 10 or the 20 percent rule (which is based on historical data) provides a useful way to determine the profile values where the lifecycle curve transitions.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Cox, regarding developing normalized parameter values for the maturity and decline phase, to develop normalized parameter values for the introduction and growth phases, because it would provide a useful way to determine what phases of the life cycle the product is in.

Regarding **Claim 11**, Cox teaches the limitations above regarding demand forecasting using product life cycle profiles. Cox also teaches that additional effects on demand may be added to a baseline lifecycle curve to develop a combined forecast that accounts for the baseline demand and additional demand elements.

Cox does not teach using a measure of channel inventory to generate an inventory-adjusted demand forecast as per:

generating an inventory- adjusted demand forecast based upon a convolution of the event-adjusted demand forecast with a measure of channel inventory and sell-through impact on product demand.

However, Official Notice is taken that it is old and well known in the art for channel inventory to have an impact on demand, since availability of a product in certain sales channels is known to help drive sales. Accounting for channel inventory in a sales forecast better accounts for the impact of inventory level on sales.

It would have been obvious to one of ordinary skill in the art to modify the teachings of Cox to include the step of the adjusting demand based on channel inventory because it would provide a better, more improved forecast by taking into account the known effect that channel sales has on inventory.

Regarding **Claim 12**, Cox does not teach:

computing the channel inventory impact measure based upon an estimate of aggregate channel weeks of supply.

Official Notice is taken that it is old and well known in the art of market forecasting to estimate channel inventory based on an estimate of total or aggregate weeks of supply. Weeks of supply is a known metric that accurately accounts for a ratio of demand to actual inventory to calculate the time remaining for the inventory to meet demand (i.e. the relationship of inventory to sales).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings Cox regarding using inventory channel supply to estimate an impact on demand to computing the channel inventory using an aggregate weeks of supply measure, because it would provide an accurate way to estimate the input of inventory on demand.

Regarding **Claim 15**, Cox teaches adjusting a demand forecast based on a convolution of external effects to a demand forecast, however Cox does not teach:

generating a demand- adjusted demand forecast based upon a convolution of the inventory adjusted demand forecast with a measure of forecast error

computed from a measure of actual demand and a measure of demand predicted by the inventory-adjusted demand forecast.

The examiner takes Official Notice that adjusting a forecast using error values is old and well known in the art. This technique provides for adjusting a forecast to be more accurate once actual data is available.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Cox regarding estimating forecast demand, to include the step of adjusting the demand using error values, because it would provide a way to make the forecast more accurate using available sales data.

Regarding **Claim 16**, Cox does not teach:

smoothing the measure of forecast error in accordance with an exponentially-weighted moving average function.

Official Notice is taken that it is old and well known in the art to use an exponentially-weighted moving average function to smooth values. Smoothing is performing to more clearly show trends in the data because noise and outliers are removed.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Cox regarding estimating forecast demand, to include the step of adjusting the demand using error values and smoothing the error values using an exponentially-weighted moving average function, because it would provide an effective way to more clearly show trends in the data by removing noise and outliers from the error values.

Claims 17-20 recite limitations similar to those addressed by the rejection of **Claims 1-12, 15, 16** above, and are therefore rejected under the same rationale.

7. **Claims 13, 14** are rejected under 35 USC. 103(a) as being unpatentable over **Cox** in view of **Smith**. Stephen A **Smith**; Dale D Achabal; "Clearance pricing and inventory policies for retail chains", Management Science, Linthicum: Mar 1998.Vol.44, Iss. 3; pg. 285, 16 pgs.

Regarding **Claim 13**, Cox teaches that inventory has an impact on demand but does not teach:

wherein computing the channel inventory impact measure comprises computing a measure comparing the aggregate channel weeks of supply estimate and an estimate of an aggregate weeks of supply target for the channel.

Smith teaches:

wherein computing the channel inventory impact measure comprises computing a measure comparing the aggregate channel weeks of supply estimate and an estimate of an aggregate weeks of supply target for the channel.

Page 288 column 2 para 3, Smith teaches that inventory has an impact on sales via a function where sales is dependent on inventory. Smith teaches that inventory only has an impact on sales when inventory exceeds a threshold. Smith's value f_0 defines this threshold. Smith teaches comparing the inventory (i.e. aggregate channel weeks of supply) and an estimate of the inventory target (i.e. aggregate channel weeks of supply target) enables inventory to be adjusted so that it's effect on sales is optimized (see also page 293 equation 26 in column 1).

Smith and Cox both address issues related to sales forecasting, thus Smith and Cox are both analogous art.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Cox regarding using estimating product sales using various profile impacts, to include the step of computing a demand impact based on a comparison of estimated and targeted channel inventory, because it would provide an accurate way to estimate the impact of inventory on demand while optimizing the inventory level.

Regarding **Claim 14**, Cox does not teach:

wherein computing the channel inventory impact measure further comprises adjusting the comparison measure based upon an estimate of channel demand sensitivity to actual inventory levels relative to target inventory levels.

Smith teaches:

wherein computing the channel inventory impact measure further comprises adjusting the comparison measure based upon an estimate of channel demand sensitivity to actual inventory levels relative to target inventory levels.

Page 293 column 1 para 3, Equation 26 adjusts the inventory comparison measure using a sensitivity factor to inventory (greek letter mu).

Smith teaches comparing the inventory (i.e. aggregate channel weeks of supply) and an estimate of the inventory target (i.e. aggregate channel weeks of supply target) enables inventory to be adjusted so that it's effect on sales is optimized (see also page 293 equation 26 in column 1).

Smith and Cox both address issues related to sales forecasting, thus Smith and Cox are both analogous art.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Cox regarding using estimating product sales using various profile impacts, to include the step of computing a demand impact based on a

comparison of estimated and targeted channel inventory and adjusting the comparison using a sensitivity factor, because it would provide an accurate way to estimate the inpact of inventory on demand while optimizing the inventory level.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

McFadden, Daniel; Train, Kenneth; "Mixed MNL Models for Discrete Response", Sep/Oct 2000, Journal of Applied Econometrics, 15, 5, ABI/INFORM Global, p.447.

Fourier Transform, Wikipedia, the free encyclopedia, 10/10/06, en.wikipedia,org/wiki/Fourier_transform, pp.1-12.

Eskin, Gerald J; "Dynamic Forecast of New Product Demand Using a Depth of Repeat Model", May 1973, JMR Journal of Marketing Research, 10, 0000002, ABI/INFORM Global, p.115.

Bassin, William M., "The Logistic Curve – another approach to new product forecasting", Fall 1991, The Journal of Business Forecasting Methods & Systems, 10, 3, ABI/INFORM Global, p.14.

Paszko, Mira; Sheldon, Paul, "Product Life Cycles and Profitability", Summer 1989, The Journal of Business Forecasting Methods & Systems, 8, 2; ABI/INFORM Global, p.26.

Morrison, Jeffrey; "Life Cycle Approach to New Product Forecasting", Summer 1995, The Journal of Business Forecasting Methods & Systems, 14, 2, ABI/INFORM Global, p.3.

Nelson, Edward, "The Product Life Cycle of Engineered Metals: a comparative analysis of the application of product life cycle theory", Spring 1992, The Journal of Business & Industrial Marketing, 7, 2, ABI/INFORM Global, p.5.

Culbertson, et.al. "Control system approach to e-commerce fulfillment: Hewlett-Packard's experience", Winter 2000/2001, The Journal of Business Forecasting Methods & Systems, 19, 4, ABI/INFORM Global, p.10.

Burruss, Jim; Kuettner, Dorothea; "Forecasting for short-lived products: Hewlett-Packard's Journey", Winter 2002/2003, The Journal of Business Forecasting Methods & Systems, 21, 4; ABI/INFORM Global, p.9.

Snyder, et.al.; "Forecasting for Inventory Control with Exponential Smoothing", August 1999 working paper, Monash University, pp.1-40.

Lapide, Larry; "New developments in business forecasting", Fall 2001, The Journal of Business Forecasting Methods & Systems, Flushing, Vol. 20, Iss. 3, 2 pgs, ProQuest ID 91693335.

Angrist, et.al. "Non-parametric demand analysis with an application to the demand for fish", April 1995, Technical Working Paper No. 178, National Bureau of Economic Research, pp.1-44.

Cox, Louis Anthony; "Forecasting Demand for Telecommunications Products from Cross-sectional Data", Mar/Apr 2001, Telecommunications Systems, 16, 3-4, ABI/INFORM Global, p.437.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan G. Sterrett whose telephone number is 571-272-6881. The examiner can normally be reached on 8-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on 571-272-6729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JGS 10-3-06

Romain Jeanty
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Art Unit 3623